THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An electrically operated tuning fork apparatus, comprising:

a tuning fork having a base and a pair of tines, said tines and having tips remote from said base and formed of or including material in which a magnetic field can be induced;

a electrical coil for receiving at least a portion of both tines of said tuning fork;

whereby at least one of said tines can be vibrated relative to the other of said tines by passing a varying, substantially uni-directional current through said coil and thereby inducing mutually repulsive magnetic fields in said tines.

2. An apparatus as claimed in claim 1, wherein said varying current has a substantially square wave form.

3. An apparatus as claimed in claim 1, wherein said varying current has a substantially square wave form and a substantially 50% duty cycle.

4. An apparatus as claimed in any one of the preceding claims, wherein said tips of the tines protrude from the coil so that said at least one of said tips can vibrate by a greater amplitude than can be accommodated by said coil.

5. An apparatus as claimed in any one of the preceding claims, wherein said coil is elliptical, with a major axis oriented in the plane of vibration of the tines, so that a reduction in the total size of the apparatus can be achieved.

6. An apparatus as claimed in any one of the preceding claims, wherein said apparatus includes additional magnetically permeable material located outside said coil for providing a return path for the magnetic field produced by said coil, and attracting said tines towards said

additional material to augment the r pulsion of said tines.

7. An apparatus as claimed in any one of the preceding claims, wherein one of said tines is more massive than the other of said tines, so that said less massive of said tines is deflected while said more massive of said tines is substantially undeflected.

8. An apparatus as claimed in claim 7, wherein said more massive of said tines is tapered to accommodate deflection of said less massive of said tines.

9. An apparatus as claimed in any one of the preceding claims, including a biasing permanent magnet adjacent said base of said tuning fork or located around at least a portion of said tuning fork.

10. An apparatus as claimed in any one of the preceding claims, including an optical fibre located on said at least one of said tines.

11. An apparatus as claimed in any one of the preceding claims, wherein said coil is tapered according to the deflection curve of said tines.

12. An apparatus as claimed in any one of the preceding claims, wherein said coil is a former-less coil.

13. An apparatus as claimed in any one of the preceding claims, wherein said apparatus includes a sensor to provide a signal indicative of the position of said at least one tine so that the tuning fork can be maintained at resonance.

14. An apparatus as claimed in claim 13, wherein said sensor is a piexoelectric sensor, a fibre sensor system, a hall effect sensor or a series capacitive sensor.

15. An endoscope, microscope or endomicroscope including an apparatus as claim d in any one of the prec ding claims.

16. A scanning head for an endoscope, microscope or endomicroscope including an apparatus as claimed in any one of claims 1 to 14.

17. A method for electrically vibrating a tuning fork having a base and a pair of tines, said tines and having tips remote from said base and formed of or including material in which a magnetic field can be induced, said method comprising:

locating at least a portion of said tines within a electrical coil; and

passing a varying, substantially uni-directional current through said coil to induce mutually repulsive magnetic fields in said tines and thereby inducing at least one of said tines to vibrated relative to the other of said tines.

18. A method as claimed in claim 17, wherein said varying current has a substantially square wave form.

19. A method as claimed in claim 17, wherein said varying current has a substantially square wave form and a substantially 50% duty cycle.

20. A method as claimed in any one of claims 17 to 19, including arranging said tips to protrude from said coil so that said at least one of said tips can vibrate by a greater amplitude than can be accommodated by said coil.

21. A method as claimed in any one of claims 17 to 20, wherein said coil is elliptical, with a major axis oriented in th plane of vibration of said at least one tine.

22. A method as claimed in any on of claims 17 to 21, including locating additional magnetically p rmeable

material located outside said coil to provide a return path for the magnetic field produced by said coil, and thereby attracting said tines towards said additional material to augment the repulsion of said tines.

23. A method as claimed in any one of claims 17 to 22, wherein one of said tines is more massive than the other of said tines, so that said less massive of said tines is deflected while said more massive of said tines is substantially undeflected.

24. A method as claimed in claim 23, wherein said more massive of said tines is tapered to accommodate deflection of said less massive of said tines.

25. A method as claimed in any one of claims 17 to 24, including varying said current so as to vibrate said tuning fork at the resonant frequency of said tuning fork.

26. A method as claimed in any one of claims 17 to 25, including magnetically biasing said tuning fork by locating a permanent magnet adjacent said base of said tuning fork or located around at least a portion of said tuning fork.

27. A method as claimed in any one of claims 17 to 26, including providing a signal indicative of the position of said at least one tine so that the tuning fork can be maintained at resonance.

28. A method as claimed in claim 27, wherein said signal is providing by means of a sensor and wherein said sensor is a piexoelectric sensor, a fibre sensor system, a hall effect sensor or a series capacitive sensor.

29. A method of vibrating an optic fibre in an endoscope, a microscop or an endomicroscope including the method as claimed in any one of claims 17 to 28.